

**VERTRAG ÜBER INTERNATIONALE ZUSAMMENARBEIT AUF DEM GEBIET DES PATENTWESENS**

**PCT**

**INTERNATIONALER VORLÄUFIGER PRÜFUNGSBERICHT**  
(Artikel 36 und Regel 70 PCT)

REC'D 18 NOV 2004

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|                                                                                             |                                                                                                                                          |                                                |
|---------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------|
| Aktenzeichen des Anmelders oder Anwalts<br>O.Z. 6075-WO                                     | <b>WEITERES VORGEHEN</b> siehe Mitteilung über die Übersendung des internationalen vorläufigen Prüfungsberichts (Formblatt PCT/IPEA/416) |                                                |
| Internationales Aktenzeichen<br>PCT/EP 03/07158                                             | Internationales Anmeldedatum (Tag/Monat/Jahr)<br>04.07.2003                                                                              | Prioritätsdatum (Tag/Monat/Jahr)<br>24.08.2002 |
| Internationale Patentklassifikation (IPK) oder nationale Klassifikation und IPK<br>H01M2/16 |                                                                                                                                          |                                                |
| Anmelder<br>CREAVIS GESELLSCHAFT FÜR TECHNOLOGIE UND...                                     |                                                                                                                                          |                                                |

1. Dieser internationale vorläufige Prüfungsbericht wurde von der mit der internationalen vorläufigen Prüfung beauftragten Behörde erstellt und wird dem Anmelder gemäß Artikel 36 übermittelt.
  
2. Dieser BERICHT umfaßt insgesamt 4 Blätter einschließlich dieses Deckblatts.  
 Außerdem liegen dem Bericht ANLAGEN bei; dabei handelt es sich um Blätter mit Beschreibungen, Ansprüchen und/oder Zeichnungen, die geändert wurden und diesem Bericht zugrunde liegen, und/oder Blätter mit vor dieser Behörde vorgenommenen Berichtigungen (siehe Regel 70.16 und Abschnitt 607 der Verwaltungsrichtlinien zum PCT).  
Diese Anlagen umfassen insgesamt 6 Blätter.
  
3. Dieser Bericht enthält Angaben zu folgenden Punkten:  
  - I  Grundlage des Bescheids
  - II  Priorität
  - III  Keine Erstellung eines Gutachtens über Neuheit, erforderliche Tätigkeit und gewerbliche Anwendbarkeit
  - IV  Mangelnde Einheitlichkeit der Erfindung
  - V  Begründete Feststellung nach Regel 66.2 a)ii) hinsichtlich der Neuheit, der erforderlichen Tätigkeit und der gewerblichen Anwendbarkeit; Unterlagen und Erklärungen zur Stützung dieser Feststellung
  - VI  Bestimmte angeführte Unterlagen
  - VII  Bestimmte Mängel der internationalen Anmeldung
  - VIII  Bestimmte Bemerkungen zur internationalen Anmeldung

|                                                                                                                                                                                                   |                                                                          |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------|
| Datum der Einreichung des Antrags<br>17.03.2004                                                                                                                                                   | Datum der Fertigstellung dieses Berichts<br>17.11.2004                   |
| Name und Postanschrift der mit der internationalen Prüfung beauftragten Behörde<br>Europäisches Patentamt<br>D-80298 München<br>Tel. +49 89 2399 - 0 Tx: 523656 epmu d<br>Fax: +49 89 2399 - 4465 | Bevollmächtigter Bediensteter<br>Schwaller, J-M<br>Tel. +49 89 2399-8351 |



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# INTERNATIONALER VORLÄUFIGER PRÜFUNGSBERICHT

Internationales Aktenzeichen PCT/EP 03/07158

## I. Grundlage des Berichts

1. Hinsichtlich der **Bestandteile** der internationalen Anmeldung (*Ersatzblätter, die dem Anmeldeamt auf eine Aufforderung nach Artikel 14 hin vorgelegt wurden, gelten im Rahmen dieses Berichts als "ursprünglich eingereicht" und sind ihm nicht beigefügt, weil sie keine Änderungen enthalten (Regeln 70.16 und 70.17)*):

### Beschreibung, Seiten

1-26

in der ursprünglich eingereichten Fassung

### Ansprüche, Nr.

1-30

eingegangen am 10.07.2004 mit Schreiben vom 08.07.2004

### Zeichnungen, Blätter

1/3-3/3

in der ursprünglich eingereichten Fassung

2. Hinsichtlich der **Sprache**: Alle vorstehend genannten Bestandteile standen der Behörde in der Sprache, in der die internationale Anmeldung eingereicht worden ist, zur Verfügung oder wurden in dieser eingereicht, sofern unter diesem Punkt nichts anderes angegeben ist.

Die Bestandteile standen der Behörde in der Sprache: zur Verfügung bzw. wurden in dieser Sprache eingereicht; dabei handelt es sich um:

- die Sprache der Übersetzung, die für die Zwecke der internationalen Recherche eingereicht worden ist (nach Regel 23.1(b)).
- die Veröffentlichungssprache der internationalen Anmeldung (nach Regel 48.3(b)).
- die Sprache der Übersetzung, die für die Zwecke der internationalen vorläufigen Prüfung eingereicht worden ist (nach Regel 55.2 und/oder 55.3).

3. Hinsichtlich der in der internationalen Anmeldung offenbarten **Nucleotid- und/oder Aminosäuresequenz** ist die internationale vorläufige Prüfung auf der Grundlage des Sequenzprotokolls durchgeführt worden, das:

- in der internationalen Anmeldung in schriftlicher Form enthalten ist.
- zusammen mit der internationalen Anmeldung in computerlesbarer Form eingereicht worden ist.
- bei der Behörde nachträglich in schriftlicher Form eingereicht worden ist.
- bei der Behörde nachträglich in computerlesbarer Form eingereicht worden ist.
- Die Erklärung, daß das nachträglich eingereichte schriftliche Sequenzprotokoll nicht über den Offenbarungsgehalt der internationalen Anmeldung im Anmeldezeitpunkt hinausgeht, wurde vorgelegt.
- Die Erklärung, daß die in computerlesbarer Form erfassten Informationen dem schriftlichen Sequenzprotokoll entsprechen, wurde vorgelegt.

4. Aufgrund der Änderungen sind folgende Unterlagen fortgefallen:

- Beschreibung, Seiten:
- Ansprüche, Nr.:
- Zeichnungen, Blatt:

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**INTERNATIONALER VORLÄUFIGER  
PRÜFUNGSBERICHT**

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5.  Dieser Bericht ist ohne Berücksichtigung (von einigen) der Änderungen erstellt worden, da diese aus den angegebenen Gründen nach Auffassung der Behörde über den Offenbarungsgehalt in der ursprünglich eingereichten Fassung hinausgehen (Regel 70.2(c)).

*(Auf Ersatzblätter, die solche Änderungen enthalten, ist unter Punkt 1 hinzuweisen; sie sind diesem Bericht beizufügen.)*

6. Etwaige zusätzliche Bemerkungen:

**V. Begründete Feststellung nach Artikel 35(2) hinsichtlich der Neuheit, der erfinderischen Tätigkeit und der gewerblichen Anwendbarkeit; Unterlagen und Erklärungen zur Stützung dieser Feststellung**

1. Feststellung  
Neuheit (N) Ja: Ansprüche  
Nein: Ansprüche 1,13,29,30  
Erfinderische Tätigkeit (IS) Ja: Ansprüche  
Nein: Ansprüche 2-12,14-28  
Gewerbliche Anwendbarkeit (IA) Ja: Ansprüche: 1-30  
Nein: Ansprüche:

2. Unterlagen und Erklärungen:

**siehe Beiblatt**

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**Zu Punkt V**

**Begründete Feststellung hinsichtlich der Neuheit, der erfinderischen Tätigkeit und der gewerblichen Anwendbarkeit; Unterlagen und Erklärungen zur Stützung dieser Feststellung**

1. Das Dokument D1 = EP-A-0766326 offenbart in Beispiel 3 eine Separator-Elektrode Einheit umfassend:
  - i) eine für eine Li-Batterie geeignete poröse Elektrode, die gemäß Beispiel 1 hergestellt wird (daher zweifelsfrei porös) und
  - ii) einer auf dieser Elektrode aufgebrachte Separatorschicht.

Die Separatorschicht wird gemäß Beispiel 3 hergestellt, d.h durch Bestreichen der Elektrode mit einer Mischung enthaltend:

- a) ein hitzebeständiges Glaspulvers mit einem mittleren Partikeldurchmesser von 7  $\mu\text{m}$ ,
- b) 5 % Polyethylenglykol
- c) ein 10-fach verdünnter Kieselsol

Da Kieselsol vom Fachmann als anorganischer Kleber angesehen wird und in der vorliegenden Anmeldung als bevorzugt betrachtet wurde (siehe dazu Anspruch 18), fällt zweifelsfrei die in Beispiel 3 hergestellte Separator-Elektrode Einheit unter den Wortlaut der geltenden Ansprüche 1, 13, 29-30, die daher **durch D1 neuheitsschädlich getroffen sind** (Artikel 33(1) und (2) PCT).

2. Die weiteren Merkmale der abhängigen Ansprüche 2-12 bzw. 14-28 sind entweder trivial, im Fachgebiet üblich oder innerhalb der Kompetenz eines Fachmannes, der den in D1 verbessern will, sodaß der Gegenstand der Ansprüche 2-12 bzw. 14-28 auch **keine erfinderische Tätigkeit** beinhaltet (Artikel 33(3) PCT).

REPLACED BY  
ART 34 AMDT

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DT01 Rec'd PCT/PTC 11 FEB 2005

THE FOLLOWING IS THE ENGLISH TRANSLATION OF THE  
AMENDMENTS TO THE INTERNATIONAL PRELIMINARY  
EXAMINATION UNDER ARTICLE 34: Amended Sheets (pages 34,  
35, 36, 37 and 38)

REPLACED BY  
ART 34 AND

What is claimed is:

1. A separator-electrode unit comprising a porous electrode useful as an electrode in a lithium battery and a separator layer applied to this electrode, characterized in that the separator-electrode unit comprises an inorganic separator layer which comprises at least two fractions of metal oxide particles which differ from each other in their average particle size and/or in the metal.
2. A separator-electrode unit according to claim 1, characterized in that the separator layer comprises metal oxide particles having an average particle size ( $D_g$ ) which is greater than the average pore size ( $d$ ) of the pores of the porous electrode that are adhered together by metal oxide particles having a particle size ( $D_k$ ) which is smaller than the pores of the porous positive electrode.
3. A separator-electrode unit according to either of claims 1 and 2, characterized in that the separator layer has a thickness ( $z$ ) which is less than  $100 D_g$  and not less than  $1.5 D_g$ .
4. A separator-electrode unit according to any one of claims 1 to 3, characterized in that the separator layer has a thickness ( $z$ ) which is less than  $20 D_g$  and not less than  $5 D_g$ .
5. A separator-electrode unit according to at least one of claims 1 to 4, characterized in that the metal oxide particles having an average particle size ( $D_g$ ) which is greater than the average pore size ( $d$ ) of the pores of the porous positive electrode are  $Al_2O_3$  and/or  $ZrO_2$  particles.

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- REPLACED BY  
ANT 34 1987
6. A separator-electrode unit according to at least one of claims 1 to 5, characterized in that the metal oxide particles having an average particle size ( $D_k$ ) which is smaller than the average pore size ( $d$ ) of the pores of the porous positive electrode are  $\text{SiO}_2$  and/or  $\text{ZrO}_2$  particles.
- 5
7. A separator-electrode unit according to at least one of claims 1 to 6, characterized in that the metal oxide particles having an average particle size ( $D_g$ ) which is greater than the average pore size ( $d$ ) of the pores of the porous positive electrode have an average particle size ( $D_g$ ) of less than 10  $\mu\text{m}$ .
- 10
- 15
8. A separator-electrode unit according to at least one of claims 1 to 7, characterized in that the separator layer comprises a further coating with shutdown particles which melt at a desired shutdown temperature.
- 20
9. A separator-electrode unit according to claim 8, characterized in that the shutdown particles have an average particle size ( $D_w$ ) which is not less than the average pore size ( $d_s$ ) of the pores of the porous separator layer.
- 25
10. A separator-electrode unit according to either of claims 8 and 9, characterized in that the shutdown particle layer has a thickness ( $z_w$ ) which ranges from about equal to the average particle size of the shutdown particles ( $D_w$ ) up to 10  $D_w$ .
- 30
11. A separator-electrode unit according to at least one of claims 1 to 10, characterized in that the separator layer has a porosity of from 30 to 70%.
- 35

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ART 64  
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12. A separator-electrode unit according to at least one of claims 1 to 11, characterized in that the unit is bendable down to a radius of 50 cm without damage.

5

13. A separator-electrode unit according to at least one of claims 1 to 11, characterized in that the electrode is an electrode which is useful as a positive electrode (cathode) or as a negative electrode (anode).

10

14. A process for producing a separator-electrode unit according to at least one of claims 1 to 13, which comprises forming a porous inorganic coating separator layer on a porous electrode substrate useful as a positive (cathode) or negative (anode) electrode in a lithium battery by applying a suspension which comprises metal oxide particles in a sol and solidifying the inorganic separator layer on the electrode by at least one thermal treatment.

15

15. A process according to claim 14, wherein the suspension comprises metal oxide particles having an average particle size ( $D_g$ ) which is greater than the average pore size (d) of the pores of the porous positive electrode.

20

16. A process according to claim 14 or 15, wherein, as the case may be, the metal oxide particles or the metal oxide particles having an average particle size ( $D_g$ ) which is greater than the average pore size (d) of the pores of the porous positive electrode are  $\text{Al}_2\text{O}_3$  and/or  $\text{ZrO}_2$  particles.

30

17. A process according to any one of claims 14 to 16, wherein the particles used as metal oxide

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ART 34 AS OF

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- 37 -

particles have an average particle size of less than 3  $\mu\text{m}$ .

18. A process according to any one of claims 14 to 17,  
5 wherein the suspension is applied to the substrate by printing on, pressing on, pressing in, rolling on, knifecoating on, brushing on, dipping, spraying or pouring on.
- 10 19. A process according to at least one of claims 14 to 18, wherein the suspension used has a weight ratio of metal oxide particles to sol in the range from 1:1 000 to 2:1.
- 15 20. A process according to at least one of claims 14 to 19, wherein the suspension comprises at least one sol of the elements Al, Zr or Si or a mixture of these sols and is produced by suspending the metal oxide particles in at least one of these  
20 sols.
21. A process according to claim 20, wherein the sols are particulate sols.
- 25 22. A process according to claim 20, wherein the sols are polymeric sols.
23. A process according to any one of claims 20 to 22,  
30 characterized in that the sols are obtained by hydrolyzing at least one alkoxide compound of the elements Al, Zr or Si with water or an acid or a combination of these compounds.
- 35 24. A process according to at least one of claims 14 to 23, wherein the suspension has pyrogenic silica added to it to adjust the viscosity of the suspension.

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ANT 341407

25. A process according to claim 24, wherein the silica mass fraction of the suspension is in the range from 0.1 to 10% by weight.

5 26. A process according to at least one of claims 14 to 25, wherein the suspension applied to the electrode is solidified by heating to 50-500°C.

10 27. A process according to claim 26, wherein the heating is effected at a temperature of from 200 to 280°C for from 0.5 to 10 minutes.

15 28. A process according to at least one of claims 14 to 27, wherein the solidifying of the suspension applied to the electrode is followed by the application to the separator-electrode unit of a layer of shutdown particles which melt at a desired shutdown temperature to create a shutdown mechanism.

20 29. A process according to claim 28, wherein the layer of shutdown particles is formed by applying a suspension of shutdown particles having an average particle size which is greater than the average pore size of the separator layer in a sol, water, solvent or solvent mixture.

25 30. A process according to claim 29, wherein the suspension of shutdown particles further comprises an adhesion promoter.

30 31. The use of a separator-electrode unit according to at least one of claims 1 to 13 in lithium batteries.

35 32. A battery comprising a separator-electrode unit according to at least one of claims 1 to 13.

Translation

## PATENT COOPERATION TREATY

## PCT

## INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)



|                                                                                           |                                                                                                                        |                                                               |
|-------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------|
| Applicant's or agent's file reference<br>O.Z. 6075-WO                                     | FOR FURTHER ACTION See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416) |                                                               |
| International application No.<br>PCT/EP2003/007158                                        | International filing date (day/month/year)<br>04 July 2003 (04.07.2003)                                                | Priority date (day/month/year)<br>24 August 2002 (24.08.2002) |
| International Patent Classification (IPC) or national classification and IPC<br>H01M 2/16 |                                                                                                                        |                                                               |
| Applicant<br>CREAVIS GESELLSCHAFT FÜR TECHNOLOGIE UND INNOVATION MBH                      |                                                                                                                        |                                                               |

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.</p> <p>2. This REPORT consists of a total of <u>4</u> sheets, including this cover sheet.</p> <p><input checked="" type="checkbox"/> This report is also accompanied by ANNEXES, i.e., sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).</p> <p>These annexes consist of a total of <u>6</u> sheets.</p> <p>3. This report contains indications relating to the following items:</p> <ul style="list-style-type: none"> <li>I <input checked="" type="checkbox"/> Basis of the report</li> <li>II <input type="checkbox"/> Priority</li> <li>III <input type="checkbox"/> Non-establishment of opinion with regard to novelty, inventive step and industrial applicability</li> <li>IV <input type="checkbox"/> Lack of unity of invention</li> <li>V <input checked="" type="checkbox"/> Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement</li> <li>VI <input type="checkbox"/> Certain documents cited</li> <li>VII <input type="checkbox"/> Certain defects in the international application</li> <li>VIII <input type="checkbox"/> Certain observations on the international application</li> </ul> |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

|                                                                |                                                                    |
|----------------------------------------------------------------|--------------------------------------------------------------------|
| Date of submission of the demand<br>17 March 2004 (17.03.2004) | Date of completion of this report<br>17 November 2004 (17.11.2004) |
| Name and mailing address of the IPEA/EP<br><br>Facsimile No.   | Authorized officer<br><br>Telephone No.                            |

## INTERNATIONAL PRELIMINARY EXAMINATION REPORT

## I. Basis of the report

## 1. With regard to the elements of the international application:\*

- the international application as originally filed  
 the description:

pages \_\_\_\_\_ 1-26 \_\_\_\_\_, as originally filed  
 pages \_\_\_\_\_ , filed with the demand  
 pages \_\_\_\_\_ , filed with the letter of \_\_\_\_\_

- the claims:

pages \_\_\_\_\_ , as originally filed  
 pages \_\_\_\_\_ , as amended (together with any statement under Article 19)  
 pages \_\_\_\_\_ , filed with the demand  
 pages \_\_\_\_\_ 1-30 \_\_\_\_\_, filed with the letter of \_\_\_\_\_ 10 July 2004 (10.07.2004)

- the drawings:

pages \_\_\_\_\_ 1/3-3/3 \_\_\_\_\_, as originally filed  
 pages \_\_\_\_\_ , filed with the demand  
 pages \_\_\_\_\_ , filed with the letter of \_\_\_\_\_

- the sequence listing part of the description:

pages \_\_\_\_\_ , as originally filed  
 pages \_\_\_\_\_ , filed with the demand  
 pages \_\_\_\_\_ , filed with the letter of \_\_\_\_\_

## 2. With regard to the language, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item. These elements were available or furnished to this Authority in the following language \_\_\_\_\_ which is:

- the language of a translation furnished for the purposes of international search (under Rule 23.1(b)).  
 the language of publication of the international application (under Rule 48.3(b)).  
 the language of the translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

## 3. With regard to any nucleotide and/or amino acid sequence disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- contained in the international application in written form.  
 filed together with the international application in computer readable form.  
 furnished subsequently to this Authority in written form.  
 furnished subsequently to this Authority in computer readable form.  
 The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.  
 The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4.  The amendments have resulted in the cancellation of:

- the description, pages \_\_\_\_\_  
 the claims, Nos. \_\_\_\_\_  
 the drawings, sheets/fig \_\_\_\_\_

5.  This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).\*\*

\* Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rule 70.17).

\*\* Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.

## INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.  
PCT/EP 03/07158

## V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

## 1. Statement

|                               |        |                     |
|-------------------------------|--------|---------------------|
| Novelty (N)                   | Claims | YES                 |
|                               | Claims | 1, 13, 29, 30<br>NO |
| Inventive step (IS)           | Claims | YES                 |
|                               | Claims | 2-12, 14-28<br>NO   |
| Industrial applicability (IA) | Claims | 1-30<br>YES         |
|                               | Claims | NO                  |

## 2. Citations and explanations

1. D1 (EP-A-0766326) discloses in example 3 a separator-electrode unit comprising:
- i) a porous electrode which is suitable for a lithium battery and produced as per example 1 (and is therefore certainly porous); and
  - ii) a separator layer applied to this electrode.

The separator layer is produced as per example 3, i.e. by spreading over the electrode a mixture containing:

- a) a heat-resistant glass powder having a mean particle diameter of 7 µm;
- b) 5 % polyethylene glycol;
- c) a 10-fold dilution of silica sol.

Since a person skilled in the art considers a silica sol to be an inorganic adhesive and the present application regards a silica sol as being preferable (claim 18), the separator-electrode unit produced in example 3 is certainly covered by the current claims 1, 13 and 29 and 30, **the novelty of whose subject matter is therefore prejudiced** (PCT Article 33(1) and (2)).

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.  
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2. The other features in dependent claims 2 to 12 and 14 to 28 are either trivial, conventional in the technical field, or within the competence of a person skilled in the art wishing to improve the D1 device, such that the subject matter of claims 2 to 12 and 14 to 28 does **not involve an inventive step** (PCT Article 33(3)).